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09/990,604	11/21/2001	John T. Brady	57029US002	3886

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EXAMINER
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METZMAIER, DANIEL S

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 09/03/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/990,604

Applicant(s)

BRADY ET AL.

Examiner

Daniel S. Metzmaier

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 2/26/2002 & 1/29/2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-69 is/are pending in the application.
- 4a) Of the above claim(s) 25-69 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 20-24 is/are rejected.
- 7) ☒ Claim(s) 16-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 & 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

Claims 1-69 are pending and have been subject to restriction. Claims 1-24 are considered on the merits. The remaining claims 25-69 have been withdrawn at this time. The Information Disclosure Statements filed February 26, 2002 and January 29, 2003 have been received.

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-24, drawn to an aqueous colloidal composition, classified in class 516, subclass 90.
  - II. Claims 25-37, drawn to agglomerated nanoparticles of Ti/Sb, classified in class 423, subclass 598.
  - III. Claims 38-69, drawn to a nanocomposite precursor, classified in class 524, subclass 408.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions of Group I and Group II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a pigment in paints and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit

Art Unit: 1712

evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. Inventions of Group III and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because Group III does not require the dispersion to be an aqueous colloidal dispersion. The subcombination has separate utility such as in ceramics or in fire-proofing compositions.
4. Inventions of Group II and Group III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions include an agglomerate in Group II, which is useful in ceramics and as a fire-proofing agent and the nanocomposite does not require the formation of agglomerates.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Art Unit: 1712

6. Because these inventions are distinct for the reasons given above and the search required for Groups II or III is not required for Group I, restriction for examination purposes as indicated is proper.

7. During a telephone conversation between Examiner S. Bos and Attorney/Agent Bradford B. Wright on August 11, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-24. Affirmation of this election must be made by applicant in replying to this Office action. Claims 25-69 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

9. The drawings were received on November 21, 2001 have been accepted by the draftsman.

### ***Claim interpretation***

10. The phrase "at least about" in claims 7-10 has been held to be indefinite where close prior art exist. It is suggested applicants change the claim to "at least" or employ "about". A similar situation exist for claims 12 and 13, which employ "less than about".

Art Unit: 1712

See MPEP 2173.05(b) and ***Amgen, Inc. v. Chugai Pharmaceutical Co.***, 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991).

***Claim Rejections - 35 USC § 112***

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-14 defined the Ti/Sb mixed oxide nanoparticles comprise a rutile-like crystalline phase. The phrase "rutile-like" is indefinite as to scope. It is unclear how much rutile crystalline phase is present if any.

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1712

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 1-13, 15 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruno, US 5,776,239. Bruno (column 2, lines 27-33, and column 4, lines 54 et seq) discloses ultrafine hydrothermally treated powders having an average crystallite size of about 1-100 nm, preferably about 4-60 nm, with agglomerates from their primary crystalline size up to about 300 nm and having 95 to 100% rutile crystals.

Bruno differs from the claims in an exemplified composition of antimony doped titanium oxide dispersion.

Bruno (column 6, lines 30 et seq, and claims) teaches the metal oxides (titanium oxide) may be doped with 0 to at least 20 weight % of dopant metals including antimony and said dopant metals are added to the hydrolysable titanium compound, *ie.*, aqueous titanium oxalate. Bruno (column 7, lines 1-9) teaches the use of an autoclave, shaker tube or other pressure vessels and (column 7, lines 18 et seq) recovering the slurry product.

Art Unit: 1712

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ titanium oxide doped with greater than zero to at least 2-0% by weight of antimony as an obvious combination of particles in the processing dispersion for the art known benefits of antimony as a fire retarding material and to vary the titanium oxide particle charge.

The particle and crystallite sizes of claims 2, 3 and 12-13 read on the disclosed crystallites and their agglomerates. The weight ratios of claims 4-6 read on an/or would have been obvious in view of the Bruno disclosure of 0 to at least 20 weight % of antimony dopant. The % rutile reads on the disclosure that the particles are 95 to 100% rutile structure.

To the extent Bruno differs from claims 22 and 24 in the further step of centrifuging, it would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to centrifuge the dispersion subsequent to hydrotreating as a well known separating method, which said separating is clearly contemplated in the Bruno reference.

17. Claims 1-15 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruno, US 5,776,239, in view of Nikon Corp, JP 06-329988, as evidenced by Patent abstracts of Japan, JP406329988A, and the corresponding machine translation, Japan Patent Office. Bruno (column 2, lines 27-33, and column 4, lines 54 et seq) discloses ultrafine hydrothermally treated powders as set forth above.

To the extent Bruno differs in the lack of an explicit teaching of particles having an organic moiety bound to the particle surface, Nikon Corp ([0025]-[0033] and [0082]-



Art Unit: 1712

[0083]) discloses composite sols of titanium oxide and antimony pentoxide, wherein ([0025]) the sol may be an aqueous or aqueous/organic solvent sol. Nikon Corp lacks a disclosure of the crystalline form of the commercial sols. The particles sizes are disclosed as 1-200 nm, preferably 5-100 nm. Nikon Corp ([0029]) teaches the incorporation of a organic silicon compound or hydrolyzate as a sol constituent and ([0025]) teaches the addition of an organic amine for stabilization.

These references are combinable because they teach titanium oxide pigments for addition to plastics. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ a silane and/or an organic amine with the titanium dioxide and antimony pentoxide colloids as taught in the Bruno and Nikon Corporation.

### ***Allowable Subject Matter***

18. Claims 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WO 00/06495 is considered pertinent but lacks the Ti/Sb combination.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (703) 308-0451. The examiner can normally be reached on 9:00 AM to 5:30 PM.

Art Unit: 1712

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on (703) 308-2340. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read "Daniel S. Metzmaier".

**Daniel S. Metzmaier**  
**Primary Examiner**  
**Art Unit 1712**

DSM